

AMENDMENTS

Amendments to the Claims:

The following listing of claims will replace all previous listings and versions thereof:

Listing of Claims:

42. (Currently amended): A method for selecting a compound which reduces the activity of a SCN1A sodium ion channel comprising:
- (a) contacting a composition comprising a SCN1A sodium ion channel protein with a test compound;
 - (b) assaying the activity of the sodium ion channel in the presence of said test compound;
 - (c) comparing the activity of the sodium ion channel in the absence of said test compound; and
 - (d) selecting a compound which reduces the activity of the sodium ion channel as compared to the activity of the sodium ion channel in the absence of the test compound,
- wherein said SCN1A protein is selected from the group consisting of:
- (i) SEQ ID NO:3;
 - (ii) SEQ ID NO:4; and
 - (iii) a SCN1A protein encoded by a SCN1A nucleic acid sequence ~~having at least 95% identity overall to the nucleic acid sequences~~ as set forth in SEQ ID NO:1 or 2.
43. (Previously presented): The method of claim 42, wherein said method is used for selecting a compound capable of reducing voltage-gated ion channel activity of a human SCN1A protein associated with idiopathic generalized epilepsy (IGE).

44. (Previously presented): The method of claim 42, wherein said method is used for selecting a compound capable of reducing voltage-gated ion channel activity of a human SCN1A protein associated with generalized epilepsy with febrile seizures.
45. (Currently amended): The method of claim 42, wherein said test compound is comprised in a library of test compounds.
46. (Previously presented): The method of claim 42, wherein a SCN1A nucleic acid encoding said SCN1A protein is comprised in an expression vector.
47. (Previously presented): The method of claim 46, wherein said expression vector is comprised in a cell.
48. (Previously presented): The method of claim 42, wherein said assaying is performed in a cell free system.
49. (Previously presented): The method of claim 42, wherein said assaying is performed with a whole cell.
50. (Currently amended): The method of claim 42, wherein said ion channel activity is:
- (i) voltage dependence activation;
 - (ii) voltage dependence of steady state level of inactivation;
 - (iii) time course of inactivation;
 - (iv) the number or fraction of channels available for opening;

- (v) change in current;
- (vi) flux of ions through the channel;
- (vii) phosphorylation of channel;
- (viii) binding of molecules to the channel; or
- (ix) induction of a ~~second~~ cellular messenger.

51. (Currently amended): The method of claim ~~[[51]]~~50, wherein said flux of ions through the channel is assessed by:

- (i) fluorescence resonance energy transfer (FRET)-based voltage sensor assay;
- (ii) dibasic dyes;
- (iii) ^{14}C -guanidine;
- (iv) two electrode voltage clamp; or
- (v) patch-clamp.

52. (Currently amended): The method of claim ~~[[51]]~~50, wherein said binding of molecules ~~through~~to the channel is assessed by surface plasmon resonance.

53. (Previously presented): The method of claim 42, wherein said method is used for selecting a compound which reduces the hyperexcitability state of a SCN1A ion channel.

54. (Previously presented): The method of claim 42, wherein SEQ ID NO. 3 is obtained from a SCN1A nucleic acid sequence encoding SEQ ID NO. 3.

55. (Previously presented): The method of claim 42, wherein SEQ ID NO. 4 is obtained from a SCN1A nucleic acid sequence encoding SEQ ID NO. 4.
56. (Previously presented) The method of claim 42, wherein a SCN1A nucleic acid sequence comprises a sequence selected from the group consisting of SEQ ID NOs: 189-192.
57. (Currently amended) The method of claim 42, wherein a SCN1A protein comprises a D188V-mutation at amino acid position 188 of SEQ ID NO:3 or SEQ ID NO:4.
58. (New) The method of claim 57, wherein said mutation at amino acid position 188 is encoded by a gtt codon at positions 827-829 of SEQ ID NOs: 1 or 2.
59. (New) The method of claim 42, wherein the SCN1A sodium ion channel protein is a recombinant SCN1A sodium ion channel protein.